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On matrix-subadditive functions and a relevant trace inequality

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Abstract

Let f be a real-valued function on [0, ∞) with f(0) = 0 and n be a natural number greater than 1. We prove that if f is matrix-subadditive of ordern then it has the form f(t) = αt for some α ∈ ℝ. Moreover, we show that if the inequality Tr (f(A + B)) ≤ Tr(f(A)) + Tr (f (B)) holds true for every pair A, B of Hermitian positive semidefinite n × n-matrices then f is concave. © 1998 OPA (Overseas Publishers Association) Amsterdam B.V. Published under license under the Gordon and Breach Science Publishers imprint.

Keywords

Matrix-subadditive function, Trace inequality of subadditivity